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1. (Currently Amended) A method of feeding water to the heat transfer surfaces of a falling film evaporator having vertical evaporation channels, which channels receive feed water at upper ends and discharge water vapor from lower ends, the method including:
- 5 distributing the feed water as a spray of drops to the upper ends of the heat transfer surfaces;
separating water soluble atmospheric gases from the sprayed feed water; and,
- 10 discharging the separated atmospheric gases separate from the steam water vapor to reduce atmospheric gas contamination of the water vapor relative to the feed water.
2. (Previously Amended) An apparatus for removing dissolved gases from water to be evaporated in connection with a falling film evaporator, which apparatus comprises:
- 5 an arrangement of vertical evaporator channels which convert water passing therethrough into vapor;
at least one spraying device for breaking heated feed-water into a spray of droplets having a spray pattern substantially corresponding to an area of an upper end of the evaporator channel arrangement; and,
- 10 at least one separated gas outlet for the removal of gases separated from the sprayed droplets prior to the droplets entering the upper end of the evaporator channel arrangement reducing dissolved gas contamination of the vapor.
3. (Previously Amended) An apparatus as defined in claim 2 further including:
a trough having a perforated bottom, the trough lying above the upper end of the evaporator channel arrangement.
4. (Previously Amended) The apparatus as defined in claim 2 further including:
a substantially hemispherical chamber covering the upper end of the evaporator channel arrangement such that the
- 5 upper end of the evaporator channel arrangement forms a plane side of the hemispherical chamber; and,

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the separated gas outlet being defined in the hemispherical chamber for removing the separated gases before they can enter the evaporator channel arrangement.

5. (Previously Amended) The apparatus as defined in claim 3, further including:

a chamber covering the upper end of the evaporator channel arrangement, the separated gas outlet being defined in the chamber.

6. (Currently Amended) A method of feeding water to heat transfer surfaces of a falling film evaporator having vertical evaporation channels having upper and lower ends, the method comprising:

5 spraying drops of water with absorbed atmospheric gases to distribute the water over the upper ends of the vertical evaporation channels;

10 simultaneously with the spraying, separating the atmospheric gases from the water and discharging the separated atmospheric gases such that the atmospheric gases are removed from the water concurrently with distributing the water over the upper ends of the vertical evaporation channels;

15 evaporating the water from which the atmospheric gases have been removed in the vertical evaporation channels to generate water vapor with reduced atmospheric gas contamination; and,

20 discharging the water vapor with reduced atmospheric gas contamination from the lower ends of the vertical evaporation channel separately from the separated gases, and maintaining the water vapor separate from the separated gases to prevent dilution of the water vapor with whereby re-dissolution of the separated gases is prevented.

7. (Original) The method as defined in claim 6 further including:

collecting the sprayed droplets into a layer of water above the upper ends of the vertical evaporation channels;

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5 separating additional atmospheric gases from the water layer;
feeding water from the water layer into the upper ends of the vertical evaporation channels.

8. (Previously Amended) An apparatus for removing dissolved atmospheric gases from water, the apparatus comprising:

5 a falling film evaporator which includes a plurality of vertical evaporating channels, the vertical evaporating channels having upper ends arranged in an evaporator channel upper end arrangement for receiving water to be vaporized, product vapor exiting from a lower end of the channels;

10 a chamber covering the evaporator channel upper end arrangement;

at least one spraying device disposed in the chamber to break the water into a spray of droplets having a spray pattern which corresponds to an area of the vertical evaporating channel upper end arrangement; and

15 at least one dissolved gas outlet from the chamber for removal of the atmospheric gases separated from the water droplets during spraying before the water droplets enter the evaporating channels, such that the product vapor has a lower concentration of atmospheric gases than the water.

9. (Currently Amended) The apparatus as set forth in claim 8 wherein the vertical evaporating channel upper end arrangement is confined to a circular area and ~~further including a hemispherical~~ the chamber mounted to the vertical evaporating
5 channel upper end arrangement is hemispherical.

10. (Previously Amended) The apparatus as defined in claim 8 further including:

5 a perforated plate mounted in the chamber above and separated from the evaporator channel upper end arrangement, the spray of droplets being sprayed onto the plate, the water passing through perforations in the plate to the evaporator channel upper ends.

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11. (Previously Added) A method of purifying water comprising:

5 spraying feed water for simultaneously (i) separating nitrogen, oxygen, carbon dioxide, and other dissolved water soluble atmospheric gases from the feed water, and (ii) distributing the feed water over upper ends of vertical evaporation tubes;

10 removing the separated nitrogen, oxygen, carbon dioxide, and other dissolved water soluble atmospheric gases from the sprayed feed water;

passing the sprayed feed water from which the water soluble atmospheric gases have been separated through the vertical evaporation channels and converting at least a portion of the feed water to steam; and,

15 discharging the steam separate from the separated nitrogen, oxygen, carbon dioxide, and other water soluble atmospheric gases separately from the steam such that the discharged steam has a lower concentration of nitrogen, oxygen, carbon dioxide, and other water soluble atmospheric gases than
20 the feed water.

12. (Currently Amended) An apparatus for generating steam with a reduced atmospheric gas content, the apparatus comprising:

5 a plurality of heated vertical evaporation tubes which receive liquid feed water at an upper ends and discharge steam at a lower ends;

a feed line for supplying feed water which contains dissolved water soluble atmospheric gases;

10 a means for distributing the feed water over the upper ends of the vertical evaporation tubes and for liberating the dissolved water soluble atmospheric gases from the feed water before the feed water enters the upper ends of the vertical evaporation tubes; and,

15 a means for removing the steam separate from the liberated water soluble atmospheric gases such that the product

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steam has a lower content of water soluble atmospheric gases than the feed water.